

## ABSTRACT

Catalysts and methods useful for the production of olefins from alkanes via oxidative dehydrogenation (ODH) are disclosed. The ODH catalysts include a base metal selected from the group consisting of lanthanide metals, their oxides, and combinations thereof. The base metal is more preferably selected from the group consisting of samarium, cerium, praseodymium, terbium, their corresponding oxides and combinations thereof. The base metal loading is preferably between about 0.5 and about 20 weight percent and more preferably between about 2 and about 10 weight percent. Optionally, the ODH catalysts are further comprised of a Group VIII promoter metal present at trace levels. The Group VIII promoter metal is preferably platinum, palladium or a combination thereof and is preferably present at a promoter metal loading of between about 0.005 and about 0.1 weight percent. Optionally, the ODH catalyst is supported on a refractory support.